The present setup

MAIN CHAMBER

FOCUSING COILS

CATHODE ANODE

DEPOSITION CHAMBER

SUBSTRATE

SUBSTRATE FEEDTHOUGH
(WITH BIAS AND HEATING
CAPABILITY)

Single Flange
Designed to
Supply all
Electical and
Water Cooling
Requirements
to Anode/Cathode
Assembly

I1

I2 I3

I4

PLASMA GUIDING COILS

TO CRYO-PUMP

B

Fig 1.

Fig 2

VERSION 4.3   11-JUN-01   03:00

o   qc.067, Implanted, Channelled.
●   qc.069   Unimplanted, Channelled.
▲   qc.072   Implanted, Rotating Random
                (amorphous
                   in effect)

ENERGY (MeV)

YIELD (COUNTS)

Figure 3   Fig 3

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Figure 4

Figure 5

YIELD (COUNTS) vs ENERGY (MeV)

- qc.069 Unimplanted-Channelled
- qc.071 Implanted Channelled

^{10}B

^{11}B
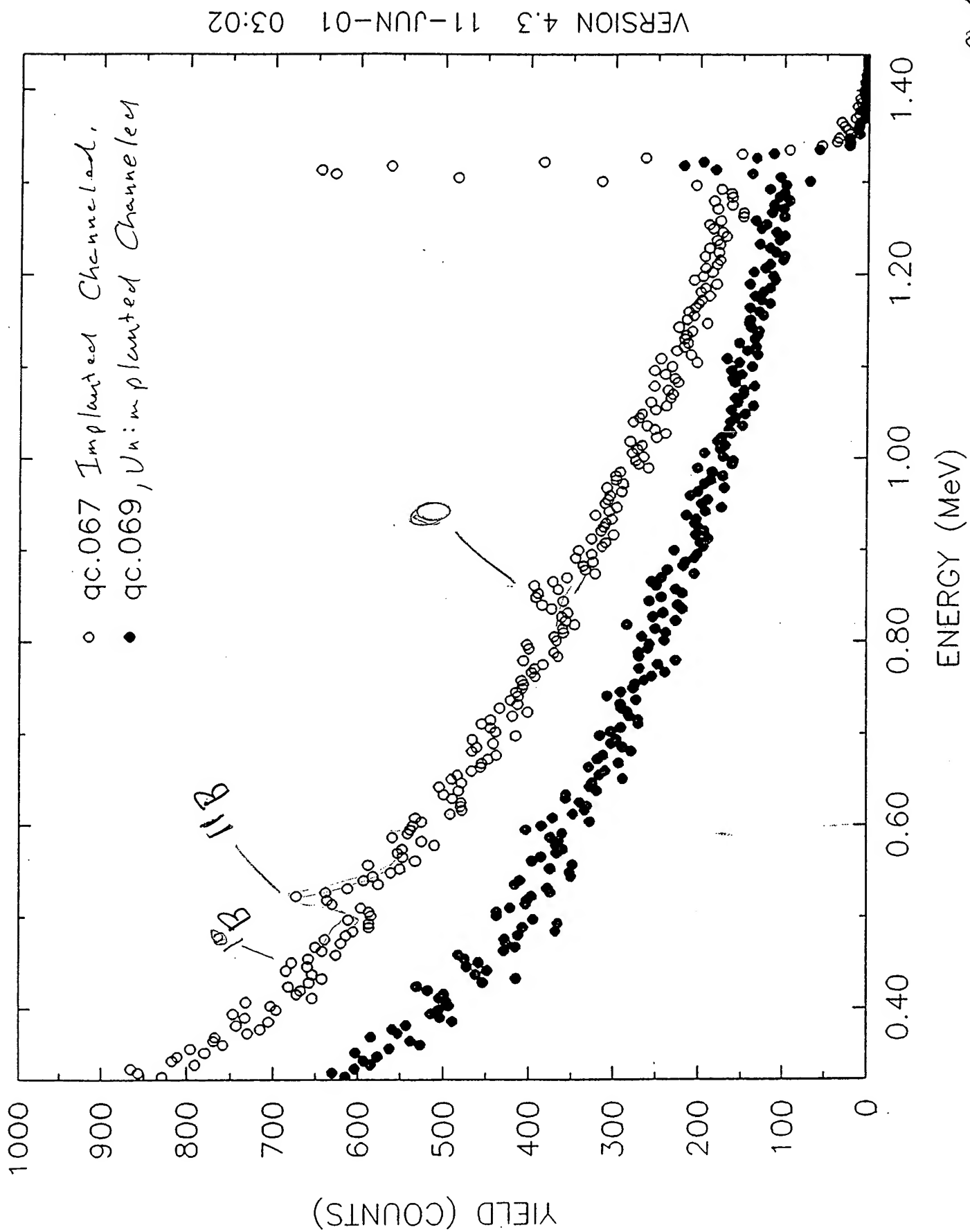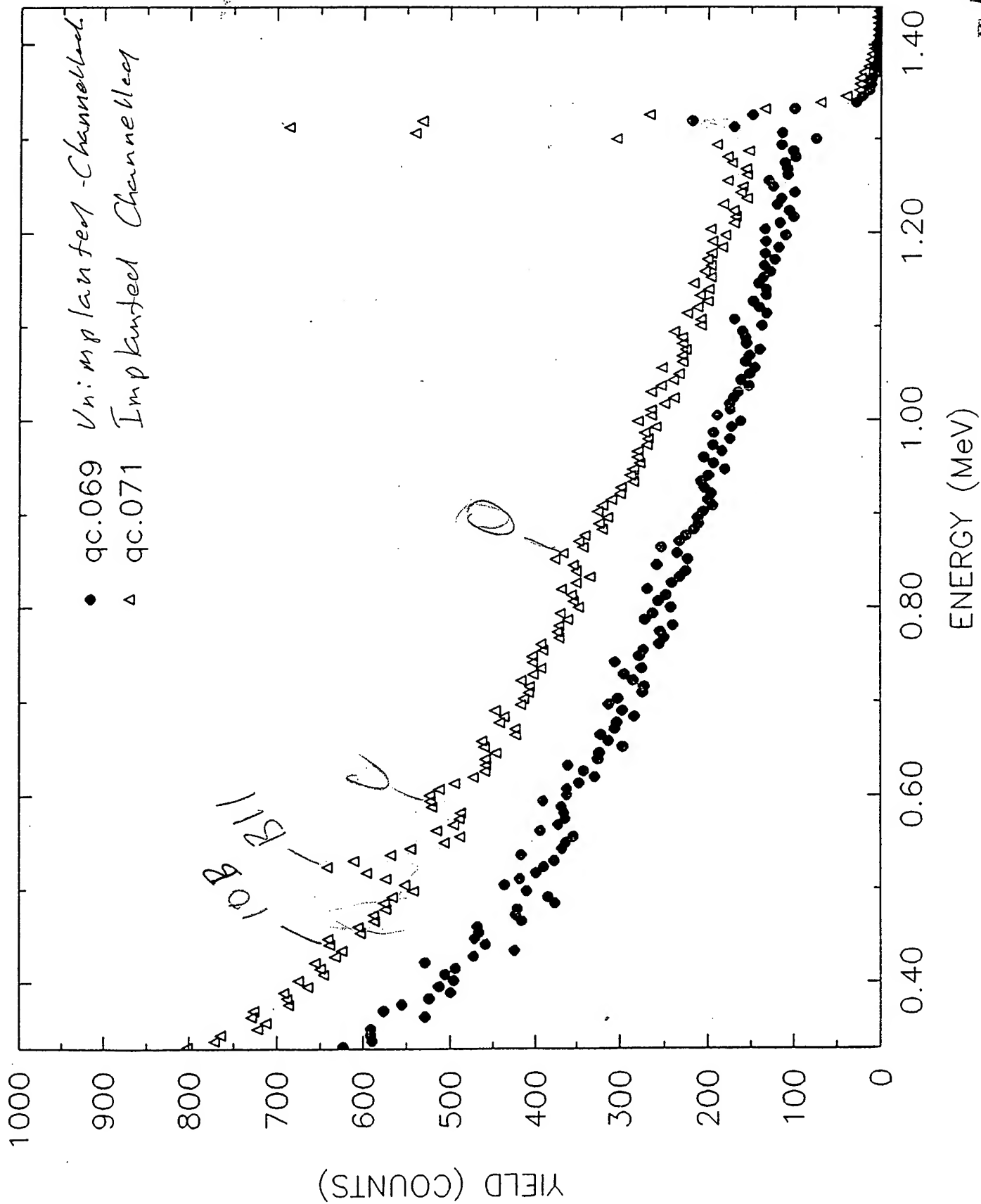
VERSION 4.3 11-JUN-01 03:13
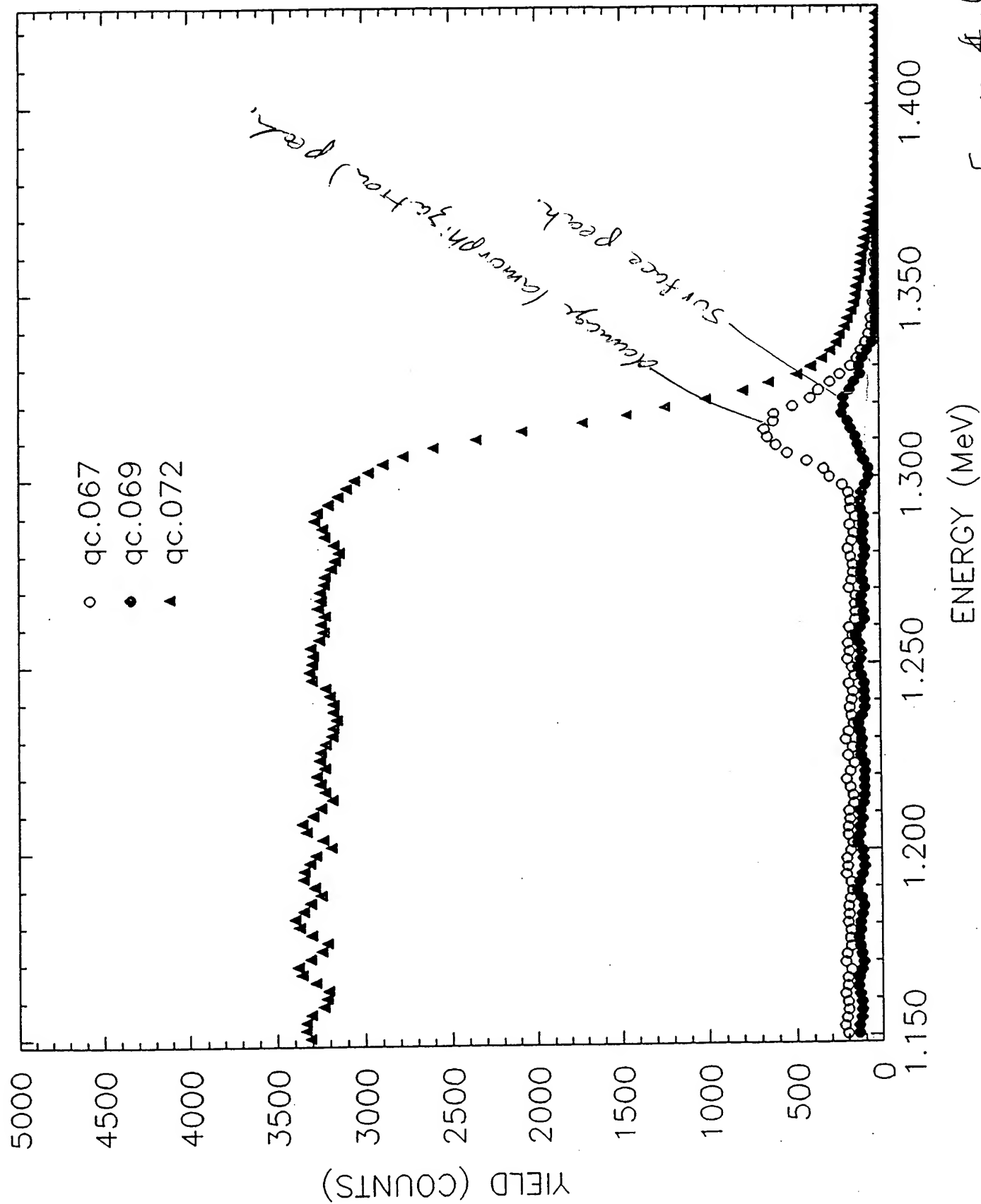
VERSION 4.3   13-JUN-01   06:40

Figure 4.6

Memory (amorph: Ti:HfOu) peak.

Surface peak.

qc.067
qc.069
qc.072

ENERGY (MeV)

YIELD (COUNTS)

Fig. 7

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YIELD (COUNTS)

CHANNEL

qc.067
qc.069

Surface Peak

Doping (amorphisation)
Peak

Fig. 8

Simulation Parameters.

- "Silicon
- 160°
- ~ 60 μeoul in.
- 1.77 msteradian acceptance ↙
- 22 keV spectrometer resolution.

~ 28Si edge

Ledge due to
30Si 29Si and 30Si

○ qc.072 Rotating Random (Amorphous) ← Data
▲ qsim.072 Simulation

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YIELD (COUNTS)

ENERGY (MeV)

Fig S. (qc.067)

● qpeak.067 – Stripped peak data from Fig S.

△ qsim.067 – Simulation for 92 Angstrom amorphous Si layer using parameters derived in Fig 6.

YIELD (COUNTS)

1000
900
800
700
600
500
400
300
200
100
0

1.290   1.300   1.310   1.320   1.330   1.340

ENERGY (MeV)

Fig 9.

Fig. 10

VERSION 4.3   15-MAR-02   05:03

qcal.093 — Standard, 10^{17} of 11B/cm^2
qcal.103 — Ion Implanted with Oxide
qcal.101 — Ion Implanted after etching
qcal.102 — Ion Implanted after etching

CHANNEL

YIELD (COUNTS)

ION RANGES

Ion Range = 41 Å
Straggle = 21 Å

Skewness = 0.3656
Kurtosis = 2.6647

Concentration (ATOMS/cm3) / (ATOMS/cm2)

— Target Depth — (Angstroms)

Figure 11

TARGET=	SILICON	2.33G	0°	keV	Ion	Dose/cm2		keV	Ion	Dose/cm2
Calc. Type	Planar, Pearson IV		1	2 B -11	6.00e16		6			
Peak Data	35Å 1.05e23 67.8%		2				7			
Sput. Loss	Coef=.000 Tot.= 0Å		3				8			
Retn. Dose	5.84e16/cm2 97.4%		4				9			
			5				10			
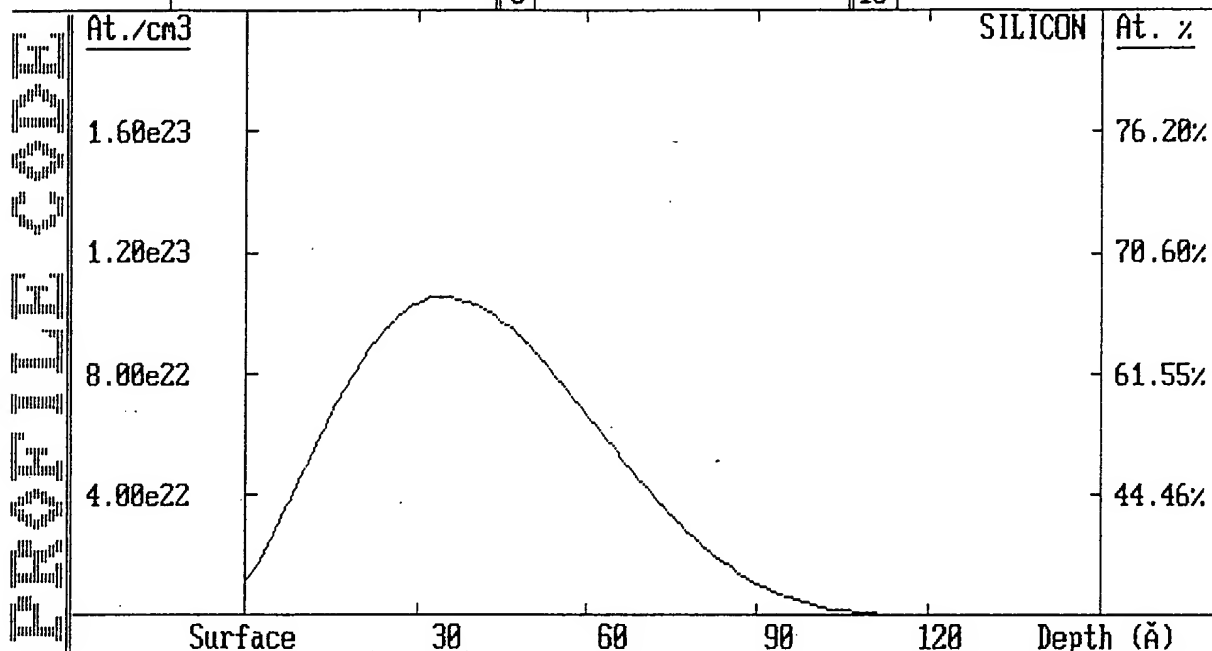
Fig. 12

TARGET=	SILICON	2.33G	0°	keV	Ion	Dose/cm2		keV	Ion	Dose/cm2
Calc. Type	Planar, Pearson IV		1	2 B	-11	4.00e17	6			
Peak Data	0Å 6.07e22 54.9%		2	2 B	-11	4.00e17	7			
Sput. Loss	Coef=.800 Tot.= 641Å		3	2 B	-11	4.00e17	8			
Retn. Dose	2.56e16/cm2 6.4%		4	2 B	-11	4.00e17	9			
			5				10			

Graph axis labels: At./cm3 (left): 2.40e23, 1.80e23, 1.20e23, 6.00e22. Right axis SILICON, At. %: 82.77%, 78.27%, 70.60%, 54.56%. Depth (Å): Surface, 30, 60, 90, 120.

Curve labels (handwritten):
1.E17 Retained, Y = 0.2
5.1 E16, Y = 0.4
3.4 E16, Y = 0.6
2.6 E16, Y = 0.8
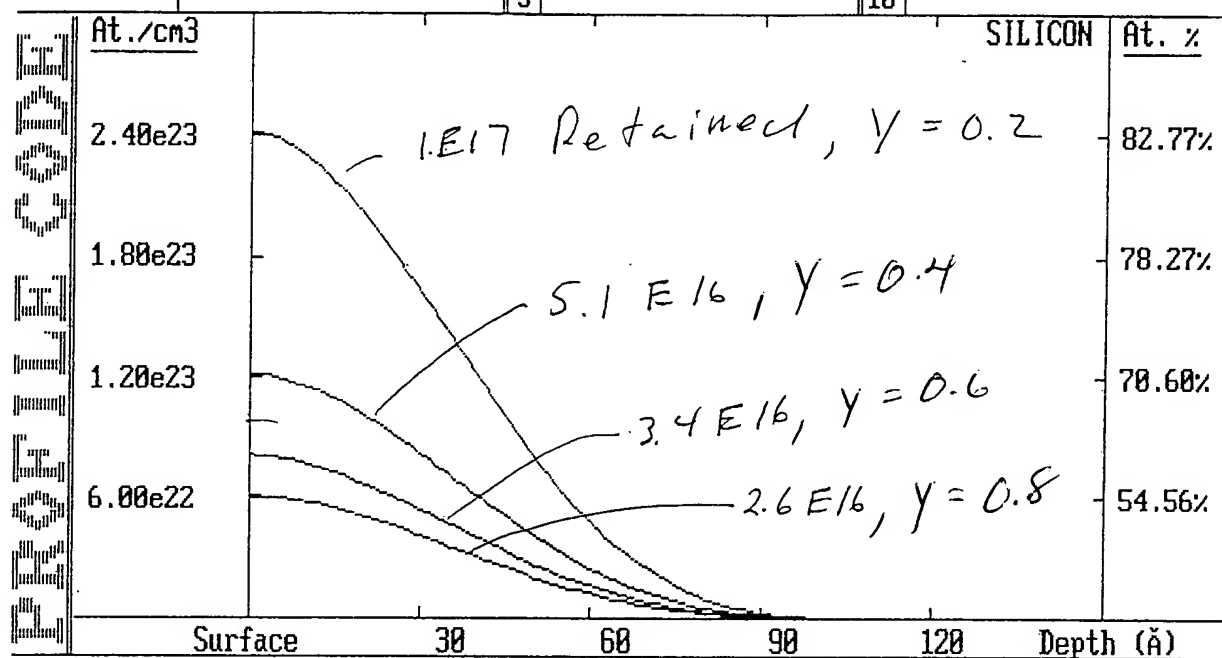
$1 \times 10^{17}/cm^2$ retained, $Y = 0.2$

$5.1 \times 10^{16}/cm^2$ retained, $Y = 0.4$

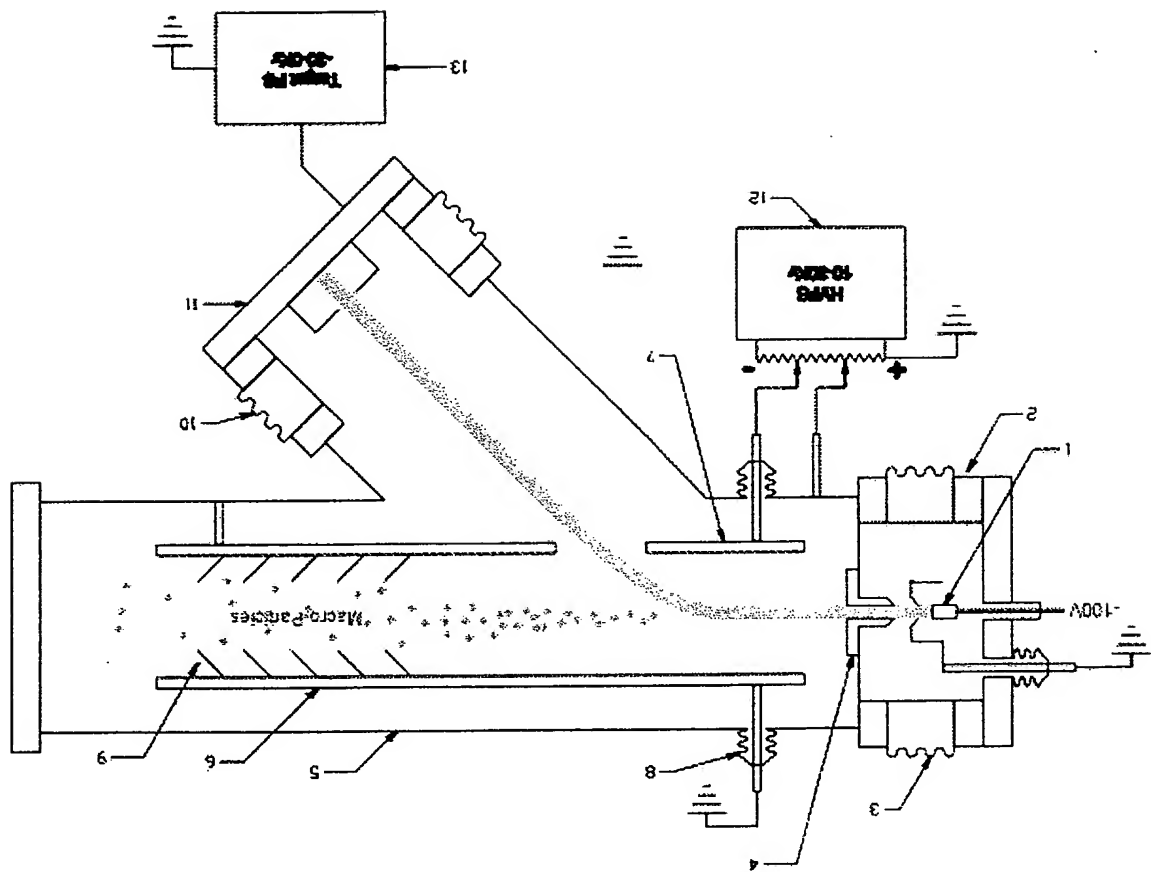$3.4 \times 10^{16}/cm^2$ retained, $Y = 0.6$

$2.6 \times 10^{16}/cm^2$ retained, $Y = 0.8$
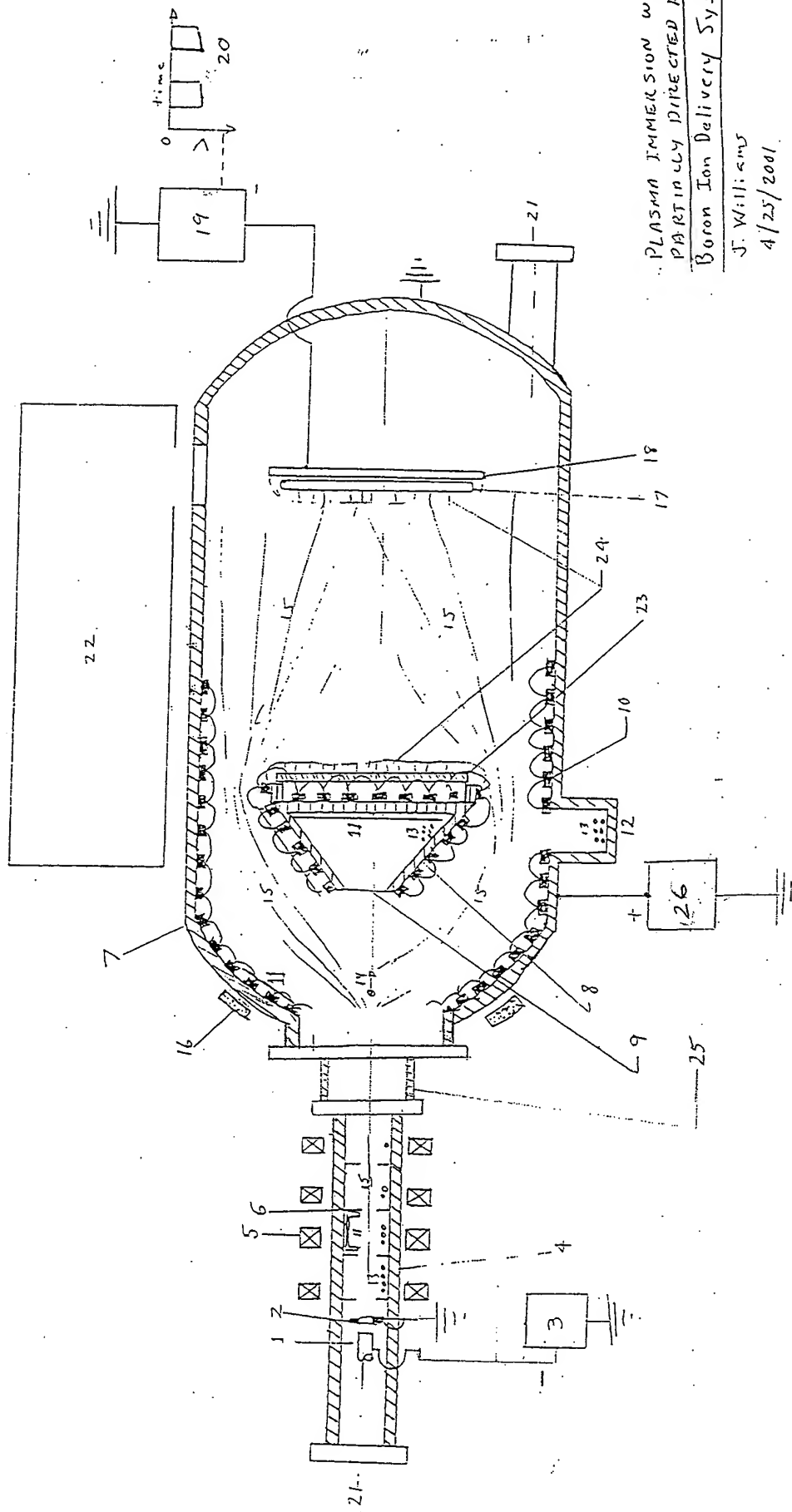
Figure 10

Fig. 13a

Fig. 14

Trigger -30 kV 13

HVPS 40-80 kV 12

Macro-Particles

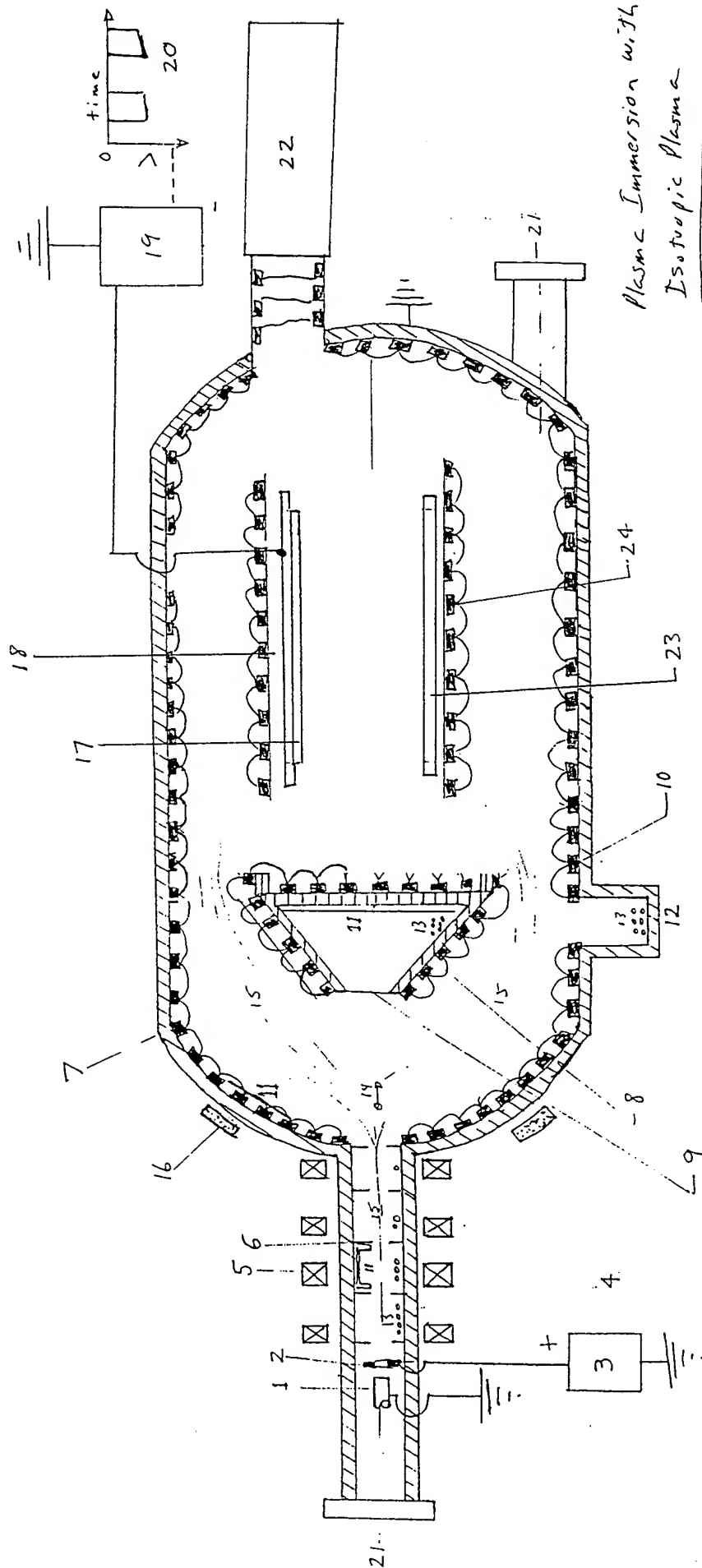-100 V

1 2 3 4 5 6 7 8 9 10 11

PLASMA IMMERSION WITH
PARTIALLY DIRECTED PLASMA

Boron Ion Delivery System

J. Williams
4/25/2001

Fig 15

Plasma Immersion with
Isotropic Plasma

Boron Ion Delivery System
5/8/2001

Fig. 16